3.5 ENERGY AND NATURAL RESOURCES

3.5.1 Affected Environment

Seattle City Light (electricity) and Puget Sound Energy (natural gas) supply energy for the project site and surrounding area. Approximately 75 percent of Seattle City Light's electrical energy is provided from City-owned hydroelectric generation facilities, which have a capacity of nearly 1,900,000 kilowatts (kW). The other 25 percent of the City's electrical supply is purchased from other power sources such as the Bonneville Power Administration (Seattle City Light, 2001).

Energy use on the project site is minimal at present, and is limited to a relatively small number of light fixtures at all existing park restroom and parking facilities. Energy use in the surrounding vicinity is typical for residential, commercial, institutional and community uses. No unusual sources of energy demand are present in the local area.

The Water Services division of Seattle Public Utilities (SPU) supplies water to Sand Point Magnuson Park and the project site. The park uses modest quantities of water in normal park operations and maintenance, primarily for irrigation of the existing natural-turf sports fields and limited landscaping areas. Please refer to **Section 3.13 Public Services and Utilities** for additional discussion of the park water supply system.

3.5.2 Environmental Impacts of the Proposed Action

3.5.2.1 Energy

The major source of energy consumption under the proposed action would be sports fields lighting. The five baseball/softball fields (Fields 7-11) would be lit an estimated 600 hours per year each. Based on the lighting configuration planned for each field (see **Section 2.2.9**), the combined instantaneous demand for these fields would be an approximate load of 325kW. The remaining six fields (Fields 5-6 and 12-15) would be lit an estimated 1,000 hours per year and represent an approximate load of 450 kW. Together, these facilities would consume an estimated 645,000 kilowatt-hours (kWh) annually.

The lighting systems for parking lots, roadways, building security and certain trails would supply the minimum amount of light necessary to meet safety standards for those use areas. The combined total electric demand for these systems is estimated at approximately 83 kW. The hours of operation for these lighting systems would vary among the facilities. Building security lights would remain on throughout the night, for example, while parking lot lights would only be operated during hours when the park is officially open for use.

A typical level of total annual electricity consumption by Seattle City Light customers in recent years is approximately 9,500,000,000 kWh (Seattle City Light, 2001). The estimated electricity consumption for sports field lighting use under the proposed action represents less than 1/100 of 1 percent (specifically, 0.007 percent) of the current annual electricity supply delivered by Seattle City Light. The peak load (the maximum 1-hour demand for electricity) on the City Light system has averaged about 1,840,000 kW in recent years. The combined load of 775 kW for the proposed sports fields would be equivalent to 0.042 percent of the existing peak load on the system. Consequently, in relative terms the new sports field load

would represent an insignificant and almost imperceptible increase in the demand for electricity from Seattle City Light, and would not have a significant effect on the utility's ability to supply power to its customers. Some of the hours of proposed sports field lighting would coincide with times of peak electrical demand (e.g., weekday late afternoon and early evening hours from late fall through early spring), while much of the lighting system use would occur during off-peak times (e.g., weekend evenings all year and weekday late evenings during the summer). The additional peak load represented by operation of the proposed project would not, by itself, be sufficient to require Seattle City Light to obtain additional peak-hour supply sources. City Light currently owns nearly 1,900,000 kW of generating capacity, and purchases any needed additional power that is in excess of the City's generating capacity. City Light has contracted with the Bonneville Power Administration to purchase a share of the federal agency's power supply over a 10-year period, which will result in City Light purchasing approximately 494,000 average kilowatts from 2001 to 2006 and 608,000 average kilowatts from 2006 to 2011.

Use of the lighting systems would add to annual park operations costs. At the current Seattle City Light retail rate of $.06 per kWh, the estimated annual consumption for sports field lighting would cost approximately $38,700 per year. The unit operating cost for the ancillary lighting systems (parking lots, roadways, security and trails) is estimated at approximately $5 per hour. If these systems were in use for an average of 4 hours daily throughout the year, the annual operating cost would be about $7,000.

3.5.2.2 Water

Implementation of the proposed action would result in an increase in water consumption at Sand Point Magnuson Park. Expansion of the natural-turf fields in the sports meadow would cause a small increase in water use for sports field irrigation. Addition of less than 3 acres of lawn and landscaping area (park, lawn and planting in **Table 2.2-1**) would also represent a small increase in water consumption for irrigation. The largest source of increased water consumption with the project would be irrigation needed for establishment and maintenance of plantings in the wetland/habitat area. Regular irrigation would be required in much of the approximately 30 acres of wetland communities to be developed, and would also be used in selected small areas of upland planting. The volume of water consumed for irrigation in the wetland/habitat complex would decrease considerably over time, as some of these communities would no longer need to be irrigated once they became fully established. Over the long term, most of the water volume needed to sustain the wetland/habitat complex would be supplied through the integrated project drainage system.

Water use at park facilities such as restrooms and concessions would dependent upon use levels and scheduling of the sports fields. Because these variables have not yet been firmly established, a precise determination of daily or annual domestic water consumption cannot be made at present. For the purpose of estimating peak flow water requirements, however, it was determined that the peak flow would be less than 100 gallons per minute if all restrooms and concessions were in use.

Water use for the synthetic-turf field areas would be limited to the small quantities needed to prepare infield mix areas and for spot cleaning. Irrigation use for the natural-turf sports meadow would vary throughout the year, with peak use typically during July and August. At an assumed watering rate of 1.2 inches per week, water use for the sports meadow would be approximately 280,000 cubic feet per month during peak months. Based on typical weather patterns for the Seattle area, the annual water use for

sports field irrigation is estimated at slightly over 1.1 million cubic feet or 25.75 acre-feet. Water consumption for non-turf landscaped areas would follow a usage pattern similar to that for the natural-turf sports fields, with peak use in July and August. Specific estimates for these areas have not been prepared, but the quantity would be considerably less than the amount for the sports fields.

The irrigation and domestic water requirements for the proposed features would not represent a significant increase in demand on the SPU water supply, and would not result in identifiable impacts such as need for additional water supply sources.

3.5.3 Impacts of the Alternatives

3.5.3.1 Lesser-Capacity Alternative

Energy

The major source of energy use under the lesser-capacity alternative would also be sports field lighting. A total of three sports fields would be lit in this case. As above, two baseball/softball fields would be lit an estimated 600 hours per year each, with an approximate combined load of 130kW. One soccer field would be lit an estimated 1,000 hours per year, with an approximate load of 75 kW. Together, these facilities would consume an estimated 175,000 kWh annually, or about 27 percent as much electricity as under the proposed action. Sports field lighting for this alternative likewise would not have a significant impact on the power supply situation for Seattle City Light.

Electrical demand from other sources, such as lighting for parking lots, roadways, building security and certain trails, would be considerably less than the 83 kW figure estimated for the proposed action, primarily because only two parking lots would be lit under the lesser-capacity alternative.

Water

Long-term water consumption under the lesser-capacity alternative would be substantially higher than for the proposed action, because of the greater number of natural-turf sports fields in the lesser-capacity alternative. Regular irrigation would be needed to maintain approximately 10 natural-turf fields (including the somewhat smaller sports meadow area) with the lesser-capacity alternative, compared to only 3 to 4 fields in the sports meadow area with the proposed action. Consequently, overall peak water demand and annual consumption for the lesser-capacity alternative would likely be on the order of 3 times higher than the proposal. Nevertheless, this level of increased water demand is still not likely to represent a significant effect on overall water demand on the SPU system.

3.5.3.2 No Action

Under the no action alternative, new sports fields would not be developed at Sand Point Magnuson Park and lighting systems would presumably not be installed at the existing sports fields. Energy would not be consumed for sports field lighting. Some energy would continue to be consumed for building, street and parking lot lighting. Modest quantities of water would continue to be used for irrigation of sports fields and landscaping within the project site.

3.5.4 Cumulative Impacts

Either of the action alternatives would represent and extremely small incremental contribution to an overall increase in electricity demand and consumption within the City of Seattle and the surrounding region. The magnitude of this increase would not be significant in the context of local utility demand and supply. Similar conditions and conclusions apply to the increased water demand represented by the proposed project. Other pending or planned projects at Sand Point Magnuson Park would not add perceptibly to the energy or water demand represented by the proposed action. Under the no action alternative, no increase in electricity or water demand would be anticipated.

3.5.5 Mitigation Measures

Energy impacts resulting from operation of the proposed park facilities would be minimized through design and operational measures. Proposed measures include:

- programmable control systems that allow lights for each athletic field to be operated separately and turned off when fields are not in use;
- specification of the minimum lighting levels necessary for safety standards in public-use areas;
- use of energy-efficient lighting fixtures for ancillary systems; and
- use of a lighting operations manual for the sports filed complex, prescribing methods and timing for light system use.

Similar measures would be employed to limit the use of water, primarily for irrigation, in the operation and maintenance of project resources. Specific plans for those measures would be developed during detailed design for the sports fields and wetland/habitat features.

3.5.6 Significant Unavoidable Adverse Impacts

Proposed development under either of the action alternatives would result in increased electricity and water consumption. The proposed energy conservation measures could reduce energy consumption, but would not eliminate it. The increase in electricity consumption would be unavoidable with either the proposed action or the lesser-capacity alternative, but in either case would not be significant within the context of local electricity supply and demand. The increase in water consumption likewise would not be significant within the local context.